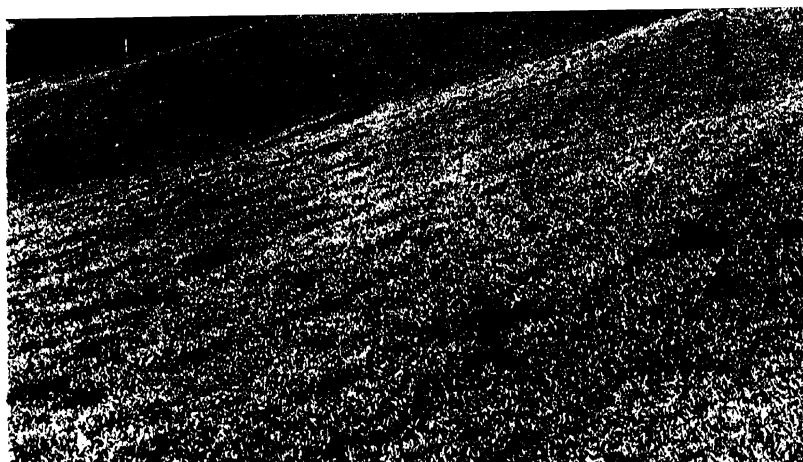




# TEA CULTIVARS FOR DARJEELING

by

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## **C O N T E N T S**

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## Tea Cultivars for Darjeeling

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### INTRODUCTION

During the past 22 years, Tea Research Association has released 30 cultivars for Darjeeling gardens. All of them have been evaluated at the Clonal Proving Station, Ging T E, Darjeeling.

The features of these cultivars have been described in various publications of the Association but no where they have been compiled together and described in simpler form for easy identification and use. Although these cultivars differ genetically but many of them have considerable phenotypic similarity which makes it difficult to identify them. There has been an increasing demand amongst Tea Planters for non-technical descriptions of tea cultivars to be embodied in a single publication containing good, coloured photographs besides grouping of cultivars according to their suitability and desirable features.

Therefore, this bulletin has been prepared to assist the tea growers of Darjeeling in particular and others in general in selecting suitable cultivars for their specific growing conditions as well as in their identification.

The cultivars are described briefly under following heads : origin, parentage, morphological description of frame, leaf, shoot and pubescence, rooting, yield, quality, flavour, resistance to drought, pests

and diseases, planting suitability and distinguishing features, if any. This bulletin contains description of 26 clonal and 2 seed cultivars.

The cultivars are grouped under 'Standard', 'Yield' and 'Quality' categories according to their evaluation for yield and cup quality. Yield of TS 378 (Nanda Devi) of 1000 kg made tea ha<sup>-1</sup> year<sup>-1</sup> at Ging T E, Darjeeling is taken as 'average'. Yields of 20% and 50% more than 'average' are classed as 'above average' and 'high' respectively.

There is no cultivar which incorporates all the desirable characteristics of an ideal tea. Therefore, in this publication, both good as well as undesirable characteristics of cultivars are described.

The best way to know the suitability of a cultivar is by growing at the place of its intended cultivation. It is therefore hoped that this bulletin will serve as a guideline in selecting suitable cultivars for their early adoption by the industry. In spite of a good number of cultivars released to the tea industry of Darjeeling, they have not been used much by the industry.

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## Salient features of Cultivars

### 1. TS 378 (Nanda Devi) : (14/5/35 × 14/6/28)

This is the first biclonal seed stock, exclusively bred for Darjeeling areas, was released by TRA in 1968. The stock is fairly uniform in its growth habit and leaf size. The yield and quality have been found to be better than the popular commercial jats. The stock is fairly resistant to drought, mites and blister blight. Suitable for cultivation on all types of soils and aspects.

### 2. TRA/T 78

This is a very vigorous China hybrid cultivar with erect leaf of dark green colour, easy rooter and a very good yielder. Yield potential is high at 2500-3000 kg made tea ha<sup>-1</sup>. Flavour, tip and briskness are well above average. This clone has good resistance to drought, fair resistance to blister blight but susceptible to red spider. A fairly good spreader with a lax frame, should be planted at 91 cm × 60 cm. Suitable for planting on all types of soil and aspects.

### 3. TRA/T 145

This is a wide spreading hybrid Assam clonal cultivar with medium size Assam type leaves, flat having greyish-green glossy foliage. Flavour, tip and briskness are above average. Yield potential is above 1400 kg made tea ha<sup>-1</sup>. This clone is susceptible to red spider, scarlet mite and blister blight but good resistance to drought. Should be planted out at sandy loam soil having a northern aspects. Growing in heavy and water-logged soils should be avoided. Flowers profusely in the unpruned years. Recommended for planting at low and mid elevations.

### 4. TRA/T 246

A large sized, semi-erect, bullate, slightly keeled leaf clonal cultivar with light green

glossy foliage. Wide spreading but moderately compact frame, good rooter but after a slow start produces a fine bush, useful flavour especially in the rains, bud is thick and long, highly pubescent and makes good golden tips. The yield potential is very high at 1500-2000 kg made tea ha<sup>-1</sup>. It is moderately resistant to red spider, fairly resistant to drought and susceptible to scarlet mite and blister blight. The clone is recommended for low and mid elevation plantings at 110 cm × 60 cm in least drought prone areas.

### 5. TRA/T 253

A camellia leaved hybrid type of clone, leaf medium size horizontal, flat with greyish green glossy foliage. This clone has a very heavy shoot weight with thick, very hairy buds which makes very lippy tea. Suitable for making silver tip teas. Wide spreading, compact frame, good rooter and makes heavy wood growth in early years, average cup quality with useful flavour and briskness. Yield potential is above average over 1500-2000 kg made tea ha<sup>-1</sup>. Clone is susceptible to red spider and blister blight but has good resistance to drought. Recommended for planting at 110 cm × 60 cm in well drained soils at low to mid elevations.

### 6. TRA/T 383

A China hybrid clone with semi-erect, dark green leaf, very akin to T 78 in growth habit, has wide spreading frame, heavy shoot weight with large hairy tip above average level of flavour and briskness. It is a good rooter with yield potential of above 2000 kg made tea ha<sup>-1</sup>. Slightly susceptible to red spider but fairly resistant to blister blight and drought. Recommended for cultivation at all elevations at 110 cm × 60 cm spacing. Flowers profusely, does well as an infill clone although is an all rounder.



7. **TRA/AV 2**

This is a fairly hardy China hybrid clonal cultivar, doing well at all elevations although leaf gets smaller at high elevations. Clone has less spreading frame of erect growing habit, requiring closer spacing, leaf small, semi-erect, light green in colour with good tips, shoots medium with high density. It is a high yielder with above average quality having high tip content and good appearance. Fairly resistant to mites and blister blight, good resistance to drought and moderately susceptible to red spider. It is a easy rooter, grows slow initially but starts growing vigorously from second year onwards.

8. **TRA/P 312**

A China hybrid clone with leaf of medium size, semi erect, dark green having pronounced serrations and matty foliage. Wide spread and compact frame, good rooter, medium weight shoot with slender, densely haired tip resulting in golden tippy tea, yield is above average with potential over 1100kg made tea ha<sup>-1</sup>. The quality is above average. It thrives well on all aspects but distinctly prefers the northern slopes and high altitudes. Needs closer spacing due to erect growth habit. Flowers profusely.

9. **TRA/RR 45**

This is a hardy China hybrid clone with high yield potential and just average in quality. Good spreader, easy rooter and easy grower at mid elevations. Small shoots with semi-erect, dark green and highly pubescent small leaves. Moderately susceptible to red spider, other mites and blister blight but good resistance to drought. Initial growth slow but spreads fast after cut across. Although grows well at all elevations but is most suitable for mid elevation planting.

10. **TRA/RR 17/144**

A China hybrid clone with semi-erect, medium size leaf of dark green colour, shoot medium in size with high pubescence. Highly spreading compact frame with dense plucking points and early flushing. Yield potential is very high at 2000-2500 kg made tea ha<sup>-1</sup>. It is moderately susceptible to red spider and blister blight but has very good drought resistance. Recommended for planting at mid to low elevations as well as for infilling at 110 cm × 60 cm spacing.

11. **TRA/CP 1**

This is a very vigorous hybrid Assam clone with semi-erect, light yellowish green, large sized leaf. Shoots are fairly large producing very tippy tea of average quality. The yield potential is very high at 3000-4000 kg made tea ha<sup>-1</sup>. Frame is widely spreading and compact and covers the ground early. Clone is an easy rooter, starts flushing early and continues flushing throughout the season. It is fairly susceptible to mites and blister blight but has very good resistance to drought. Recommended for planting at mid to low elevations as well as for infilling at 110 cm × 60 cm spacing.

12. **TRA/P 1404**

A very vigorous Assam hybrid clonal cultivar with semi-erect, medium sized, light coloured yellowish green leaf. Shoots are fairly heavy weight with large hairy tips, average flavour and briskness. It is a good rooter with good drought resistance. Yield potential is quite high like T 78, CP 1 at 2500-3000 kg made tea ha<sup>-1</sup> under favourable conditions. Slightly susceptible to mites and blister blight. This is recommended for planting at all elevations like T 78 as an all rounder but is expected to do better at mid and low elevations at 110 cm × 60 cm spacing.

CLONAL/SEED CULTIVAR PHOTOGRAPHS



TS378



TRA/AV2



TRA/CP1



TRA/P1258



TRA/BT15/263



TRA/TB3



TRA/T78



TRA/P312



TRA/P1404



TRA/TTV1



TRA/BS7/1A/76



TRA/B157



TRA/T246



TRA/RR4/5



TRA/K1/1



TRA/Sundaram



TRA/BS9/3/76



TRA/T383



TRA/RR17/144



TRA/HV39



TRA/SKM1



TRA/TB9



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## 13. TRA/K 1/1

It is an early flusher Assam hybrid quality clone producing excellent quality tea. Leaf semi-erect, dark green, medium sized with frame of spreading type compact. It has medium shoot weight with fairly hairy tip and is a good rooter. The yield potential is above average over 140 kg made tea ha<sup>-1</sup>. The flavour and briskness is excellent. Fairly susceptible to mites and blister blight but has good drought resistance. Recommended for planting at low and mid elevations and for infilling at 110 cm × 60 cm spacing.

## 14. TRA/HV 39

A vigorous and early flusher China hybrid clone of very high yield potential over 2500-3000 kg made tea ha<sup>-1</sup>. Widely spreading compact frames with medium sized, semi-erect, greyish dark green leaf producing medium weight shoots and hairy tips. Good rooter with good drought tolerance, average flavour and briskness. It is fairly resistant to red spider and mites but is susceptible to blister blight. Recommended for planting at all elevations as an all rounder.

## 15. TRA/P 1258

A standard clone of hybrid China having compact and spreading frame. Leaves semi-erect, light yellowish-green of medium size, shoots of medium weight with average flavour and briskness, good rooter. Yield potential is high at 1500-2000 kg made tea ha<sup>-1</sup>. Mildly susceptible to red spider, other mites and blister blight but good resistance to drought. It is likely to do well at all elevations.

## 16. TRA/TTV 1

A China hybrid clone of erect growth habit of moderately spreading frame having semi-erect, yellowish green, medium sized leaf. Shoot of medium weight with above average flavour and briskness. Yield potential is above average at

1600-2000 kg made tea ha<sup>-1</sup> under favourable conditions. Is a good rooter and requires close planting at 91 cm × 60 cm. Susceptible to red spider and blister blight but has good resistance to drought. Recommended for planting at mid to low elevations although it is likely to do well at all elevations.

## 17. TRA/Sundaram

A triploid clone of hybrid Assam origin with semi-erect, dark green leaves of medium size. Spreading frame, heavy shoot weight with low tips but very high yield potential of 2500-3000 kg made tea ha<sup>-1</sup>. Average flavour and briskness. Is a good rooter but slow starter. Has good resistance to drought, fairly resistant to red spider and other mites but susceptible to blister blight. Recommended for planting at mid and low elevation at 110 cm × 60 cm spacing both in pure stands as well as for infilling.

## 18. TRA/SKM 1

A vigorous China hybrid standard clone with erect, boat shaped, medium sized, light green leaf. Frame is spreading, shoots are heavy of medium weight with very hairy tips. The yield potential is high at 2000-2500 kg made tea ha<sup>-1</sup>. Makes good quality tippy tea with good flavour and briskness. Prefers medium withering. It is an easy rooter and has good drought resistance. Susceptible to red spider and blister blight. Recommended for planting at mid to low elevations as well as for infilling.

## 19. TRA/BT 15/263

A vigorous clone of standard type having uniform growth with compact and spreading type of frame. Leaf of medium size, semi-erect and yellowish green. Shoots heavy of medium weight with good hairy tips. Yield poten-



tial high at 2000-2500 kg made tea ha<sup>-1</sup>. Flavour and briskness above average. Prefers medium wither. Is a good rooter and has good resistance to drought, but moderately susceptible to red spider, other mites and blister blight. Recommended for planting at mid to low elevations as well as for infilling.

**20. TRA/BS 7/1A/76**

A China hybrid standard clone with slightly large, semi-erect, dark green leaves having good spread and compact frame. Shoots are slightly large with dense plucking points and quite hairy tips. Average rooter. Yield potential is high at over 3000 kg made tea ha<sup>-1</sup>. Produces good quality tea of above average flavour and briskness. Has good resistance to drought but is moderately susceptible to red spider, other mites and blister blight. Recommended for planting at 110 cm × 60 cm spacing at mid to low elevations.

**21. TRA/BS 9/3/76**

A hybrid clonal cultivar of standard type with semi-erect, light green leaves of medium size producing small to medium weight shoots with quite hairy tips. Yield potential is quite high over 2700 kg made tea ha<sup>-1</sup>. Above average cup quality with good flavour and briskness. Is a good rooter. It is quite tolerant to drought but is moderately susceptible to red spider and blister blight. Although is an all rounder due to hardiness but is likely to do well at mid and low elevations.

**22. TRA/TB 9**

A China-Cambod hybrid clone with erect, cambod type, roundish, medium sized, light coloured leaf without serrations in the margin. Shoots of medium weight with hairy tips producing tippy tea of above average flavour and briskness. Fair rooter. Yield potential high 2500 kg made tea ha<sup>-1</sup>. Fairly tolerant to drought and blister blight but susceptible to

red spider. Recommended for planting at mid to high elevations at 91 cm × 60 cm spacing.

**23. TRA/TB 3**

This is a China hybrid standard clone with medium sized, reddish coloured leaf suited for especially high elevation plantings at close spacing of 91 cm × 60 cm. Yield potential is above average at 1800-2000 kg made tea ha<sup>-1</sup>. Frame is spreading. Shoots small with hairy tips. Good rooter, flavour, tip and briskness is above average. Has good resistance to drought but is susceptible to blister blight and red spider.

**24. TV 19**

This is a Cambod hybrid yield clone with very high yield potential (over 4000 kg made tea ha<sup>-1</sup>) under favourable conditions. Frame is spreading and covers the ground early, leaves large of light green colour. Shoots of heavy weight with low pubescence. Is an easy rooter and early flusher. Flavour, briskness and cup quality, above average. Excellent resistance to drought, fairly tolerant to mites and blister blight. Recommended for planting at low elevations at wider spacing of 110 cm × 60 cm.

**25. TRA/B 777**

This is a China hybrid quality clone having light green, medium sized, semi-erect leaf with narrow and compact frame. Shoots of medium weight with slender very hairy tip-makes very tippy tea. The flavour and briskness are above average. Yield potential is above 1400 kg made tea ha<sup>-1</sup>. Fairly resistant but susceptible to mites and blister blight. Recommended for close planting at 91 cm × 60 cm. Does well on southern slopes.

**26. TRA/B 688**

An Assam hybrid quality clone. Leaves erect,

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medium size of dark green colour. Frame spreading and compact with less plucking points. Medium weight shoots with fairly hairy tips-making very tippy tea like B 777. Yield potential above average over 1400 kg made tea ha<sup>-1</sup>. This clone has extremely useful flavour, susceptible to red spider, blister blight but fairly resistant to drought. Recommended for mid and low elevation plantings at close spacing,

### 27. TS 379 (14/12/16 × 14/5/35)

This is the second bicalonal seed stock after TS 378 exclusively bred for Darjeeling areas, was released in 1989. Stock is superior to TS 378 in yield and quality. Leaves and shoots are of medium size. Has uniform growth and flushes throughout the year. Yield potential is high over 3000 kg made tea ha<sup>-1</sup>. Flavour, briskness and overall cup quality are above average and better than TS 378. This stock is fairly resistant to drought and has fair tolerance to red spider, other mites and blister blight. Recommended for cultivation at all elevations and aspects.

### 28. TRA/B 157

A medium sized, dark green, glossy leafed China hybrid clone having similarity to domesticated **Camellia**. Has medium sized frame "shaving brush" type with dense plucking points and many trailing lower branches. Poor rooter. Medium shoot weight with slender slightly hairy tip. Has very useful flavour and above average yield potential of over 1400 kg made tea ha<sup>-1</sup>. Clone is strongly resistant to red spider, drought but susceptible to blister blight. Does well at high altitudes. Recommended for close spaced planting at 91 cm × 60 cm especially on southern slope.

A very early flushers and keeps flushing till late December. With adequate irrigation in dry weather this clone starts flushing in mid January.



## CLASSIFICATION OF CULTIVARS ACCORDING TO THEIR EVALUATION

### Category

|          |  |
|----------|--|
| Standard | : T 78, T 246, T 383, AV 2, P 312, RR 17/144, P 1404, P 1258, TTV 1, SKM 1, BT 15/263<br>BS 7/1A/76, BS 9/3/76, TB 9, TB 3, TS 378, TS 379, T 157. |
| Yield    | : T 253, RR 4/5, CP 1, HV 39, Sundaram, TV 19  |
| Quality  | : T 145, K 1/1, B 777, B 688   |

### Shoot size

|        |  |
|--------|--|
| Small  | : RR 4/5, TB 3, TS 378   |
| Medium | : T 78, AV 2, P 312, RR 17/144, P 1258, TTV 1, SKM 1, BT 15/263, BS 9/3/76, TB 9, TS 379<br>T 157, HV 79, T 145, B 777, B 688, K 1/1 |
| Large  | : T 253, T 246, T 383, CP 1, P 1404, Sundaram, BS 7/1A/76, TV 19   |

### Pubescence

|           |   |
|-----------|---|
| Low       | : B 157, T 145, TV 19, Sundaram   |
| High      | : P 312, AV 2, RR 4/5, T 78, T 383, RR 17/144, P 1404, K 1/1, TTV 1, HV 39, BS 7/1A/76,<br>BT 15/263, TB 3, TB 9, TS 378, TS 379, P 1258, BS 9/3/76 |
| Very high | : T 253, T 246, B 777, B 688, SKM 1, CP 1   |

### Yield

|               |   |
|---------------|---|
| Average       | : T 145, B 777, B 688, K 1/1, TS 378  |
| Above average | : B 157, T 246, TB 3  |
| High          | : P 312, AV 2, T 253, RR 4/5, T 78, T 383, P 1258, TTV 1, BT 15/263, BS 7/1A/76, BS 9/3/76<br>SKM 1, TS 379, TB 9 |
| Very high     | : RR 17/144, CP 1, P 1404, Sundaram, HV 39, TV 19   |

### Flavour

|           |  |
|-----------|--|
| Average   | : T 145, T 253, T 246, B 777, RR 4/5, CP 1, P 1404, P 1258, Sundaram, HV 39  |
| Good      | : B 157, T 78, T 383, RR 17/144, TV 19, TS 378, TS 379, B 777, P 312, SKM 1, BT 15/263,<br>BS 7/1A/76, BS 9/3/76, TB 3, TB 9 |
| Very good | : AV 2, B 688, T 383, K 1/1  |

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## Drought Resistance

**Poor** : T 246  
**Fair** : B 777, K 1/1, TB 9  
**Good** : P 312, B 157, T 145, AV 2, T 253, RR 4/5, B 688, T 78, T 383, P 1404, P 1258, TTV 1, Sundaram, HV 39, SKM 1, BT 15/263, TV 19, BS 7/1A/76, BS 9/3/76, TB 3  
**Very good** : RR 17/144, CP 1, TS 378, TS 379

## Suitability

**Sub-marginal/droughty conditions** : P 312, B 157, T 145, T 253, T 78, T 383, AV 2, RR 4/5, P 1258, TTV 1, TS 378, TS 379, BS 7/1A/76, BS 9/3/76, TB 3, TB 9  
**Infilling and Interplanting** : T 78, RR 4/5, T 253, CP 1, HV 39, P 1404, Sandaram, SKM 1, BT 15/263, TS 378, TS 379, TV 19



